

CATÓLICA LISBON SCHOOL OF BUSINESS AND ECONOMICS

# The Lusoponte Concession: Case Study

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## Net Present Value of Government Transfers and Risk Allocation Analysis

**Eduardo João Baltazar Vera-Cruz Pinto**

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## **Abstract**

### **Title:**

*The Lusoponte Concession: Case Study – Net Present Value of Government Transfers and Risk Allocation Analysis*

### **Author:**

*Eduardo João Baltazar Vera-Cruz Pinto*

### **Purpose:**

*The aim of this paper is to present a case-study on the Lusoponte Concession providing an analysis of the evolution of risk allocation and Net Present Value of Government Transfers. Since the 90's, Portugal has been experiencing an increase in the number of PPP contracts. Road concessions compose a large percentage of this number and the Lusoponte Concession among them, has been a source of concern by the government. Successive Financial Rebalance Agreements, calculation of direct compensations, use of the Base Case, Imbalance in negotiating positions and evolution of the risk allocation are some of the reasons for a further analysis of this concession.*

### **Methodology:**

*This paper is structured in two major categories: 1. description of the concession contract and the Finance Rebalance Agreements and 2. analysis of the NPV of Government Transfers and Evolution of Risk Allocation.*

### **Findings:**

*This paper concludes that due to the first alterations to the initial contract (increase in toll fares and non-payment of toll fares in August) there is a strong imbalance in the current risk allocation in the Lusoponte Concession and that the government is currently the largest contributor to the financing of the project through the Direct and Indirect compensations it granted to Lusoponte.*

### **Limitations:**

*The conclusions of this paper are based on Reports by Tribunal de Contas that lack data and explanations that would enrich the analysis of risk allocation and NPV of government transfers. The extinction of the GATTEL is also a lost source of information regarding the Lusoponte Concession.*

### **Originality/Value:**

*This paper contains a further analysis of the risk allocation of the most recent FRA (FRA VI – 2008) and a detailed explanation of the Lusoponte Case, namely the Financial Rebalance Agreements. It also provides a comparison of the NPV of government transfers to the initial funding of the construction of Ponte Casco da Gama which provides original conclusions on the governments' role in this concession.*

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## **Preface**

This paper was formulated through the Public-Private Partnerships Seminar of Católica Lisbon School of Business and Economics. The paper had the direct orientation of Prof. Joaquim Miranda Sarmiento and Prof. Ricardo Reis, which presented several current themes regarding PPP's in Portugal, one of which was chosen to write this paper.

I would like to thank both my counselors, the InIR (Instituto de Infraestruturas Rodoviárias) and Tribunal de Contas for providing most of the necessary data that is used for the analysis of risk allocation and Net Present Value of Government Transfers. The method used for the analysis of risk allocation is similar to the one used by De Lemos et. Al. (2004) as well as the method of analysis of the Net Present Values are based on the conclusions taken from both Audits of Tribunal de Contas about the Lusoponte Concession (Report 31/2000 and Report 47/2001).

The Lusoponte Case has been a controversial theme in the world of PPP's in Portugal and is seen as a bad example of management of PPP and Concession contracts. By reading about the case through newspapers and published articles, I have chosen a small part of the problem to expose in my dissertation.

# 1. Introduction

Public-private partnerships (PPP) are a form of constructing and financing public infrastructures. This form of financing was generated due to the UK government's motivation of increasing the efficiency of public investment in infrastructures, which meant a sharing of the risks between both private and public sectors (Allen, 2001). A B.O.T. (Build, Operate and Transfer) model is a type of PPP that consists of the private sector taking the primary responsibility for funding, designing, building and operating a project and then transfer its ownership and control back to the State after a period of time or the fulfillment of any other form of contract deadline (Grimsey and Lewis; 2004). Financial rebalances and renegotiations in PPP's are the processes in which a PPP contract is revised and, should the revisions affect the financial balance of the project, a financial rebalance is requested. These processes are common and even necessary due to the large investment in infrastructures, the length of these types of contracts and the fear of ratchet effect (the private party strategically withholding relevant information) (Guasch, Laffont and Straub; 2006).

Portugal has been using PPP contracts to finance public infrastructures since the 90's. It is currently one of the countries that recur to these types of contracts more frequently (Cruz and Marques, 2010). The Portuguese experience is one with several examples of renegotiation of contracts and financial rebalances, with the road sector being the one with the most financial rebalance agreements and Gross Charges for the government (DGTF, 2011). The Lusoponte deal, made in 1994 is one of the most controversial deals regarding the universe of PPP's in Portugal. The numerous Financial Rebalancing Agreements (FRA) and the ineffectiveness of the initial contract, as well as the grave consequences for the taxpayers of these FRA's make it a plentiful source of bad examples regarding re-negotiations of contracts between public and private sectors.

This paper is a case-study on the several financial rescue processes of the Lusoponte concession. An analysis of the Net Present Value (NPV) of government transfers to Lusoponte due to the several FRA's and their impact on the financial balance and initial investment of the project is presented. Taking the paper by De Lemos et. al. (2004) as a benchmark, this paper proposes to further the analysis of the risk and the impact the changes, made in the concession contract through the FRA's, had on the risk of the project, as well as analyze the last Financial Rebalance Agreement of 2008 (FRA VI).

The paper starts by making a brief revision of the literature regarding PPP renegotiations and risk management in general and specifically to the Lusoponte Concession in Section 2. Section 3 presents the Case Study of the Lusoponte Concession. This Section describes the Initial Concession Agreement (Section 3.1), an explanation of the Partial Financial Rebalance Agreements (Section 3.2), the description of the most important Financial Rebalance Agreement (FRA V) (Section 3.3) and subsequent refinancing of the project (Section 0) as well as a synthesis of the previous sections (Section 3.4). An analysis of the Net Present Value (NPV) of the governments Compensations and the evolution of risk allocation is provided in Section 4. Lastly, Section 5 presents the Conclusions of the paper regarding the analysis made of the Lusoponte Case. Limitations and suggestions of further research on the topic as well as hypothesis regarding the future of the Lusoponte Concession are also provided in this section.

## **2. Literature Review**

After the applicability of the PPP model in some countries has matured, its effects are still not clear. A consensus that this type of public provision generates value is inexistent. Some of these applicability issues revolve around the complying with contract clauses, excessive tariffs, abandonment of the project or government bailout, unsatisfactory service provision and too early renegotiations that often damage social welfare (Guasch, Laffont and Straub; 2003). In Portugal, we have the example of the SCUT's with its shadow toll system which, regarding the value for money factor, a commonly used tool that analyzes the efficiency of PPP's, proved to be negative (Sarmiento, 2010).

More specifically, the abnormal recurrence of renegotiations is a source of distress when addressing the efficiency issues of PPP's. Certain types of opportunistic behavior either by firms or governments might affect the occurrence of early renegotiations, in case of the firm, it might take actions that "hold-up" the government using informational advantages to secure a better deal than the one secured in the bidding period; as for governments, an unfavorable economic context might dampen the revenues taken from the exploration of a conceded infrastructure by the firm and the government is tempted to take regulatory actions to extract the available quasi-rents from the firm once costs are sunk. This opportunistic behavior would be rendered moot if the contract were to include a complete accountability of the outcomes of possible renegotiations, complete contracting (Guasch, Laffont and Straub, 2003).



In the case of Lusoponte, there is incomplete contracting because the accountability of risks made beforehand were poor and then has been regarded as an acceptable consequence of the contract but a more complete analysis of the risks beforehand would point out, for example, the high political risks of a significant toll increase which led to the first FRA (Carmona, Macário and van der Hoofd; 2006). The key in addressing the efficiency of PPP's in Portugal passes through the ability to achieve a balanced risk-sharing mechanism, closely monitor the contract and concessionaire performances, and anticipating renegotiations (Cruz and Marques, 2010).

Risk is identified as an unexpected change in value. It can either be a positive change or a negative change, depending on the type of risk and occurrence. In terms of project risk, it is defined as an unexpected change in the value of the project. (World Bank, 2007). A balanced risk-sharing mechanism is a very much desired characteristic of the PPP contracts as it is fundamental for the efficiency of the PPP. It is, however, unlikely that an optimal risk allocation that yields maximum value for money is given in a standard PPP project, so trusting a model will only hinder the negotiations on the proper allocation of risk (Quiggin, 2005). Therefore, a specific analysis on the allocation of risks in a specific project is more likely to yield positive results.

Abednego and Ogunlana (2006), citing Ward and Chapman (1991), Edwards (1995), and Flanagan and Norman (1993), claim the conditions for the evaluation of the proper allocation of risk to be that it should be allocated to the party that has the most influence on its occurrence; the evaluation, identification and understanding of the risk must be complete by both parties; the party must have the technical and managerial capabilities to manage the risks; the party must have the financial ability to sustain the consequences of the risk or to prevent the risk from occurring; the party must be willing to accept the risk.

Analyzing the optimal risk allocation in PPP's is subject to numerous studies on empirical evidence and case studies that provide models for the allocation of risk in specific projects (de Lemos et. al., 2004; Songer et. al., 1997; Sindane, J. (2000); Spackman, 2002 and many others). Abednego and Ogunlana (2006) introduced a model that introduces not only to whom should a certain risk be allocated but also how and when should they be allocated. Quiggin (2005) specified a model that introduces put and call options in the contracts that would increase the transparency of the process and reduce the costs of disputes that would ensue otherwise.

De Lemos et al. (2004) made a case study on Lusoponte's Risk management issues claiming that a complete risk management analysis must include not only the technical factors but also a realistic assessment of environmental and social risks. One of the lessons taken from this paper is that a

“complete risk management analysis must include not only the technological factors but also a realistic assessment of environmental and social risks. In this project (Lusoponte Concession) these risks were somewhat overseen and caused the biggest problems to the project’s development”<sup>1</sup>.

This last paper is a case study on Lusoponte, therefore it contains a description of the case and it lists all the determinant risks inherent in the project. Even though it provides a table with the risk allocation and the risk management actions done to settle disputes, it does not provide an evolution of the risk throughout the projects lifetime and it focuses more on the construction, design and maintenance risks. Moreover, this paper was written before the signing of the last FRA VI (2008).

### **3. Case Study**

#### **3.1. Initial Concession Agreement**

##### **3.1.1. Historical Context**

In the beginning of the 1990’s, there was the intent to service the short supply of accesses to Lisbon by crossing the Tagus, and the project for the construction of a second bridge started taking form.

The government decided that the conception, projection, construction, financing, exploration and maintenance of this new bridge would be subject to a concession contract with a toll regimen and include in the concession contract the exploration and maintenance of the already existing bridge (Ponte 25 de Abril). The public contest opposed only 2 private entities that were pre-selected by GATTEL<sup>2</sup> from which Lusoponte was chosen to sign the concession contract.

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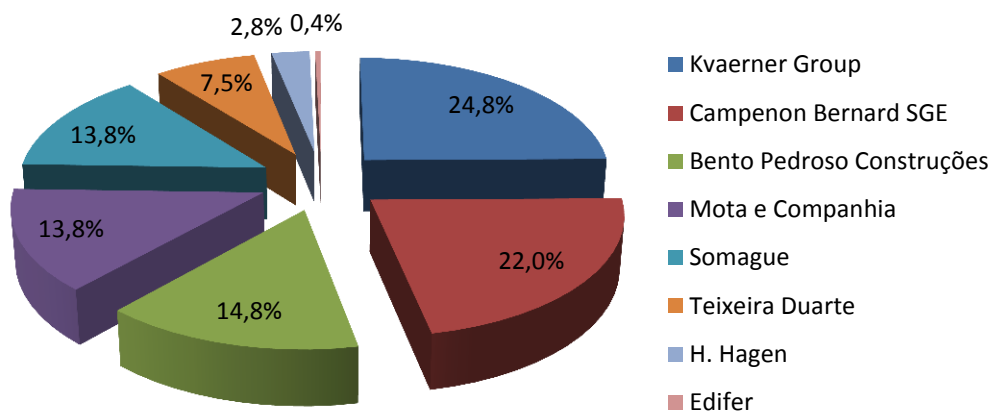
<sup>1</sup> De Lemos (2004)

<sup>2</sup> The Gabinete para a Travessia do Tejo em Lisboa (GATTEL) was an institutional body created by the government to promote the necessary arrangements (planning, coordination and control) that would enable the construction of the Second Bridge over the Tagus river (Ponte Vasco da Gama)

### 3.1.2. Lusoponte's Shareholder Structure

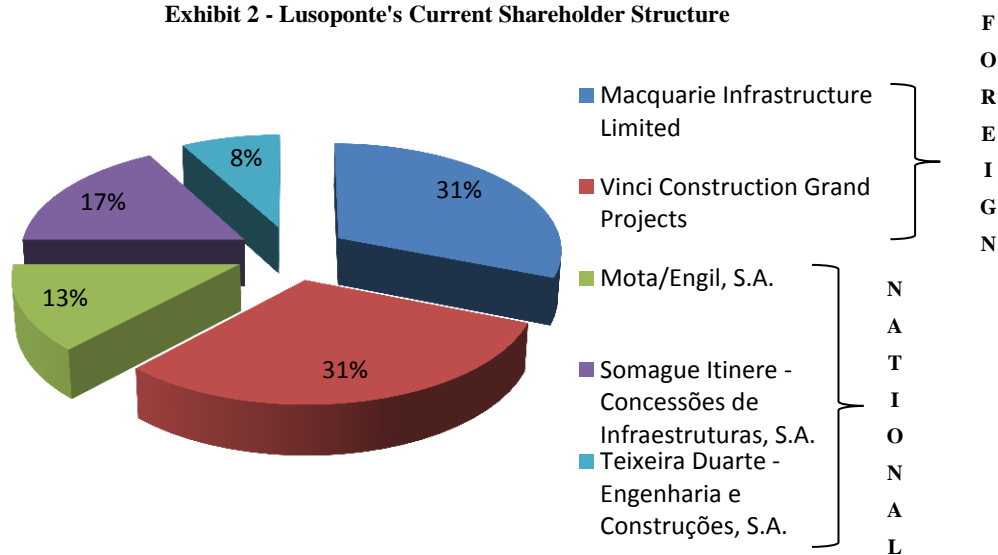
The shareholder structure of Lusoponte at the time of the Concession was made up of both national (53,2%) and foreign companies (46,8%)<sup>3</sup>:

**Exhibit 1 - Lusoponte's Initial Shareholder Structure**



The current shareholder structure of Lusoponte consists of 5 companies in which 2 of them are foreign and control 62% of the capital, while the remaining 3 Portuguese companies control 38% of equity capital:

**Exhibit 2 - Lusoponte's Current Shareholder Structure**



<sup>3</sup> Taken from the Tribunal de Contas Report 31/2000

### 3.1.3. Financing of Ponte Vasco da Gama

Ponte Vasco da Gama was financed through the following financial resources<sup>4</sup>:

**Table 1 - Financing of Construction of Ponte Vasco da Gama**

<b>Financing Source</b>	<b>M. €</b>	<b>%</b>
Cohesion Fund	319	35,6%
EIB Loan	299	33,3%
Revenues from Exploration of Ponte 25 de Abril	50	5,6%
Others (Shareholders, Gov. Support, etc.)	229	25,5%
Total	897	100,0%

The initial deadline for the EIB loan was 20 years, with no capital reimbursement in the first 10 years, guaranteed by commercial banks for 15 years. Of the total capital raised, 644 million Euros was solely for the construction of the bridge, being the rest destined to maintenance costs of both bridges, expropriation payments, reallocations and environmental projects. The EIB Loan and the Cohesion Fund were transferred in DM (Deutschmarks) and then converted to PTE (Escudos)<sup>5</sup>.

### 3.1.4. The Initial Contract (March 24<sup>th</sup> 1995)

The initial agreement was divided into 2 parts: the first had the purpose of elaborating the studies and project necessary for the second bridge's construction and also environmental impact studies. The second was the concession contract itself which had the purpose of asserting the construction projects, financial planning, maintenance and exploration of both the existing and the new bridges based on the concession parameters. For the purpose of this paper, the second part of the concession will be called "concession contract". The reason for this is that the financial rescues are solely based on this contract, which is what the remainder of the paper is about.

The construction project of Ponte Vasco da Gama was funded exclusively with private funds (equity and bank debt), with the exception of the Cohesion Funds from the EU. How was it possible for the project of construction of Ponte Vasco da Gama financially viable? It was only possible due

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<sup>4</sup> Taken from the website: [http://www.lusoponte.pt/pvg\\_projecto\\_financiamento.htm](http://www.lusoponte.pt/pvg_projecto_financiamento.htm)

<sup>5</sup> Table 1 converts the PTE (escudos) into EUR (euros) at the exchange rate 1 EUR – 200,482 PTE, this exchange rate will be used in the remainder of the paper for the purpose of estimating the impact of the amounts transferred in a single identifiable currency.

to an extended concession deadline, granted exploration of Ponte 25 de Abril (with a substantial rise in toll prices) and the exclusivity clause.

The Ponte 25 de Abril exploration was given subject to 2 alterations: the price increase of the tolls so as to obey the equalitarian principle (referred above), both bridges would have the same toll prices; and the payment of tolls in August. The first issue was subject of much controversy and social distress, which made both parties re-negotiate the agreed contract terms more than once.

An exclusivity clause was included in the contract in which the concession granted to Lusoponte the rights of exploration of any crossing of the Tagus during the lifetime of the concession in a pre-designated area. The absence of future competition on the Tagus Crossings, meaning the competition risk being transferred to the government, was an important incentive for the exclusivity of private funds in the Ponte Vasco da Gama construction project.

The rescission of the contract and its risk was shared by both parties, in which the government was liable only to fulfill the debt obligation of the concessionaire in case of rescission of the contract and ending of the project. Construction and design risk was solely allocated to Lusoponte as well as the financing risk of the project.

The maintenance risks of both bridges were not equal. Ponte Vasco da Gama's maintenance risk was solely given to Lusoponte and the risk maintenance of Ponte 25 de Abril was shared between the government and Lusoponte.

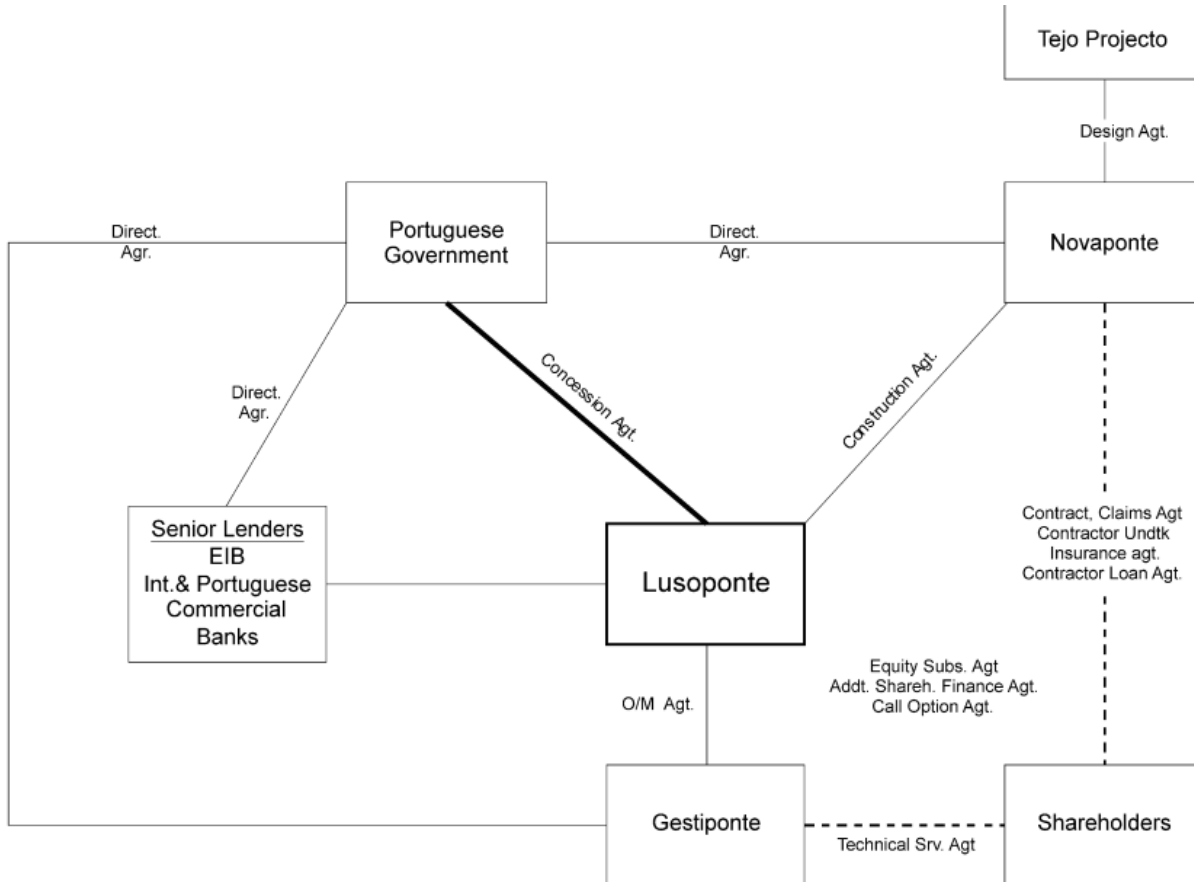
This risk allocation was given as the best practices at the time dictated, following the norms cited above of Ward and Chapman (1991), Edwards (1995), and Flanagan and Norman (1993). However, the contract specified an alternative risk management framework that could alter the risk allocations described above. This section specified a number of occurrences that might have an impact on the financial stability of the project, in which case, Lusoponte had the right to request a Financial Rebalance Agreement to restore the financial balance of the project.

Next section presents a diagram of the Initial Contract for better understanding of what is mentioned above and additional information about the bodies that were created for this concession and the agreements shared with each other.

### 3.1.5. Diagram Structure of the Initial Contract

**Exhibit 3 - Lusoponte concession contract structure**

This figure is taken from De Lemos (2004) and shows the contract structure of the Lusoponte Concession. Presenting the agreements that formed the concession and promoted the construction of Ponte Vasco da Gama and the bodies that celebrated



Source 1 - De Lemos (2004)

The above diagram (Exhibit 3) formulates the mentioned structure of the initial contract of Section 3.1.4 with the names of the agreements celebrated between the different bodies. Gestiponte is an operating sub-contractor of Lusoponte with which the Operating and Maintenance Agreement (O/M Agt.) was celebrated. Novaponte was the Construction Sub-contractor, dissolved later when the original shareholders of Lusoponte formed a separate consortium that became responsible for the design, construction, and completion of Ponte Vasco da Gama.

The next sub-chapter resumes the framework for the conditions, predicted in the initial contract, for the request of a Financial Rebalance Agreement.

### **3.1.6. Financial Rebalance Agreement (FRA) Conditions**

In the terms of the concession contract Financial Rebalance Agreement can be requested by either party if the following scenarios occur:

- Unilateral changes in the contract
- Strong disturbances in the exchange rate market (particularly because part of the financing of the construction of the Vasco da Gama bridge was in Deutschemarks, as described in section 3.1.3)
- Unexpected and unforeseeable events that have a negative impact on the financial stability of the project such as earthquakes, tidal waves etc.
- Legislative changes that have an impact on the revenues of the exploration of both bridges.

To account for these occurrences, the project must be rebalanced by the minimum requirements of financial stability of the project:

- Predetermined “Ratio of debt coverage” stated in the contract (which is 1,13 (1998); 1,19 (1999) and 1,25 (2000 and after) reaching a sum of 1,69 throughout the lifetime of the loan).
- Minimum Internal Rate of Return (IRR) of the project of 11,43%, before taxes (mainly measured through dividend policy).

After the request of the FRA is made, the parties negotiate the “instruments” that can be used in order to achieve the financial rebalance of the project; these instruments could be (one or more than one):

- Extension of the concessions deadline
- Extraordinary increase of toll fares
- Grant a financial compensation (settlement) directly from the government to Lusoponte.
- A combination of any of the 3 above, supposing an agreement between both parties.

The next section describes the Base Case in which the FRA framework base itself to measure the impact of the changes made in the concession contract.

### 3.1.7. The Base Case

The initial contract included a Base Case which is a model that uses projections of traffic volume, estimations of inflation, GDP (Gross Domestic Product), projected costs, projected revenues and other financial variables to assess the stability of the project. The Base Case is the reference used by both parties to assess the impact the occurrences described above have on the financial stability of the project. The model will predict the financial impact and produce an amount that is necessary to restore the balance according to the minimum requirements described above.

To assess the impact, the Base Case produces 3 distinct scenarios and calculates the projected revenue difference between the scenarios to financially rebalance the project:

- Balanced Version (Base Case without the alterations made)
- Unbalanced Version (Base Case with the changes made in the agreement *ceteris paribus*)
- Rebalanced Version (Base Case after the application of the instruments necessary to rebalance the project)<sup>6</sup>

Now that the initial contract is described and the framework for the request of the FRA's is explained, the next section includes the partial agreements made by both parties until 2008, excluding the global agreement of 2000. The reason for this framework is due to the large number of changes made in the concession parameters of the Global Agreement of 2000, differing from these partial agreements, which have fewer changes.

## 3.2. Partial Financial Rebalance Agreements

On July 24th 1994, to protest the increase in the toll fares of Ponte 25 de Abril predicted by the Initial Contract drawn up between Lusoponte and the government, several citizens, mostly residents of the south bank of the Tagus River, blockaded the bridge and prevented anyone from crossing it. Increased tension between the police and protesters turned it into a violent ordeal that was transmitted live to the whole country, increasing its impact on public opinion. The reason for this protest was mainly the increase in the toll prices and the payment of tolls in August.

The non-actualization of toll prices and non-payment of tolls in August were the reasons that led to several FRA's (FRA I through IV and VI) in the last 15 years.

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<sup>6</sup> An example of this process is described in Section 6.1, taken from Tribunal de Contas Report 31/2000v1



### **3.2.1. FRA I (March 24<sup>th</sup> 1995)**

Motivated by the protests, the government introduced three unilateral changes in the initial contract. Lusoponte, as it was its contractual right, requested a renegotiation and subsequent FRA's to correct the impact these unilateral changes would have on the financial balance of the project. The alterations made by the government that lead to the first FRA were:

- The introduction of discounts for frequent users of Ponte 25 de Abril
- The freezing of the toll prices in Ponte 25 de Abril
- Special Fiscal Treatment given to the revenues from the exploration of Ponte 25 de Abril during the construction of Ponte Vasco da Gama.
- Increase in the global Risk of the project due to the protests of July 1994.

The FRA was then requested by Lusoponte and a General Settlement Agreement (GSA)<sup>7</sup> was attributed in the total amount of 90,4 Million € to rebalance the project. The changes made in the toll fares (frozen prices and discounts) had an impact of 47,98 M. €, while the increase in the risk of the project yielded a 42,39 M. € settlement<sup>8</sup>. Additionally to the GSA, the government agreed on 2 indirect compensations: the first were the increased responsibilities of the government on the event of the resolution/rescission of the contract which now extended to the investments made by the shareholders of Lusoponte and the extinction of the society. The second, the liability of providing a settlement for future protests that might occur like the ones of July 24th 1994.

### **3.2.2. FRA II (September 23<sup>rd</sup> 1996)**

This agreement was based upon the unilateral change to the FRA I and the second contract of concession by the government, in which it opted for not increasing the toll fares of Ponte 25 de Abril. To compensate for the frozen toll prices, the GSA was of 4,9 M. €. This sum was calculated based on

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<sup>7</sup> The GSA (General Settlement Agreement) is a direct compensation that results from a negotiation between both the private and public parties. It aims at financially rebalancing the project for the entire lifetime of the concession and its value is based on the projections of the Base Case (section 3.1.4.2), taken from De Lemos (2004)

<sup>8</sup> Tribunal de Contas – Sector Publico Empresarial, “Auditoria á aplicação do Model Contratual e aos Acordos de Reposição do Equilibrio Financeiro – Concessão Estado/Lusoponte, SA”, Relatório 31/2000 – 2ª Secção, (2000)

the Base Case and accounting for the stability of 2 of the 3 financial ratios stated on the initial contract.

### **3.2.3. FRA III and IV (February 17<sup>th</sup> 1997 and February 22<sup>nd</sup> 1999)**

A third (FRA III) and fourth (FRA IV) agreements were signed based upon the unilateral changes made in FRA I. More specifically the non-payment of toll fares in the August months of 1996 and 1997 (FRA III), agreed toll prices for the period from 1998 to April 1999 and the additional non-payment in August 1998 of toll fares (FRA IV). The GSA amounted to 3,9 M. € (FRA III) and 63,2 M. € (FRA IV).

### **3.2.4. FRA VI (November 28<sup>th</sup> 2008)**

The objective of preventing a further sequence of FRA's rooted on the unilateral changes made in FRA I with FRA V was successful, but it did not prevent the last FRA. FRA VI differed from previous FRA's on the reasons for demanding and for the application of the new FRA methodology agreed in FRA V. It consisted of the following additional clauses to the Global Agreement (FRA V) of 2000:

- Refunding of the additional cash flow generated from the variation of the IRC tax (Income Tax) from Lusoponte to the government, clause which is durable for the remainder of the lifetime of the contract.
- The compensation of the government for the non-realization of the construction of the GATTEL building by Lusoponte, which the Base Case predicted an investment of around 2 M. € for that purpose.
- The compensation from the government to Lusoponte of the discounts made to the users in both bridges in 2005, 2006 and the 1st Semester of 2007 because of the reclassification of vehicles of Class 1.
- Reflection in the Base Case of the cost of construction of lateral protection nets on the North Access to Ponte 25 de Abril, which was an unilateral decision by the government, in the sum of 0,5 M. €.

- Both parties agreed to include in the Base Case, the cost of investment and operation of the Salinas de Samouco Foundation.
- Similarly to what was done in 2001, the FRA 6 altered the Base Case for the different financial projections of the unilateral changes listed above.
- This FRA had the uniqueness of including a third party, or a regulator, which had the ability to manage the transferring of the funds from the government to Lusoponte.

The extinction of GATTEL proved to be a highlighter of the governmental consistency in the Lusoponte Concession. Without a body to link both the MOPTC and the Ministry of Finance, it proves harder reach agreements since both public bodies have different orientations (De Lemos, 2004).

### **3.3. FRA V – Global (July 3rd 2000)**

#### **3.3.1. Contractual Alterations**

In 2000, a Global Agreement was signed which resulted in FRA V. This was the biggest FRA after the one celebrated in 1996. It intended to extend the changes made in FRA I to the entire lifetime of the concession, to avoid recurrent FRA's (like the ones seen before). FRA V also included changes in the Base Case to account for the new reality of the concession and a General Settlement Agreement was the “instrument” chosen by the government to rebalance the project. The main changes that resulted from this FRA were:

- New model of risk distribution, new methodology of FRA that opposed the one followed until now.
- New or alteration of the Base Case in which future FRA's would base themselves on. So the old Base Case would be substituted by the new Base Case and this new Global Agreement would already be reflected on the Base Case. The new Base Case exhibits increased projections of traffic volume, which increases projected revenues for Lusoponte.
- Consolidation of the differentiation principle applied to the prices in both crossings and the commercial policies (in the Ponte 25 de Abril) applied according to the FRA 1.
- The fixation of the deadline for the concession of 35 years, independent of traffic volume (independent of any revenue or profit made by Lusoponte). This results in a free extension of the

deadline of the contract (7 to 11 years), which, according to the projections of Lusoponte, was estimated the concession contract to be over in 24-28 years, given that the traffic limit of 2250 million units would be reached.

- Effective reduction in the exploration risk by the payment of a settlement that will ascend to 306,1 M. € with payments every semester between 2001 and 2019.
- Both the policies above have a negative impact on the traffic risk, reducing it further and transferring it to the government.
- Reduction of the financing risk to Lusoponte with the new financing conditions in this new global agreement.
- The alteration of fiscal law was now liable to a GSA of the government to Lusoponte which targets the reduction of fiscal risk.
- The new Base Case exhibits increased projections of traffic volume, which increases projected revenues for Lusoponte.

A synthesis of the changes made is described below in Table 2, in which a claw-back mechanism is not present in any contract, and it would be advantageous to consider given the uncertainty regarding the demand in the project. A claw-back mechanism is a system that would enable the government to benefit from the fluctuations in demand and, therefore, share the risk with Lusoponte and decrease the amount paid to restore the financial balance of the project.

**Table 2 – Synthesis of the changes made between the Initial and Global Agreements**

<b>Conditions</b>	<b>Initial Agreement</b>	<b>Global Agreement (2000)</b>
Tolls	Equalization Principle (equal prices in both bridges)	Differentiation Principle in both bridges (different prices in both bridges)
Commercial Policy	N/A	Discount system for frequent users of Ponte 25 de Abril and non-payment of tolls in August
Fiscal Benefits	Exemption from withholding IRC (Income Tax) from the interest of foreign banks	Alteration of the accounting of the revenues obtained during the construction phase of Ponte Vasco da Gama Alteration of the IVA (VAT) Allocation to the public sector of the risk of increase of IRC (Income Tax)
Concession Deadline	Until the total traffic flow of: 2.250 million vehicles	30 years (until 2030)
“Claw-Back” Clause	N/A	N/A

### **3.3.2. Refinancing of the Project**

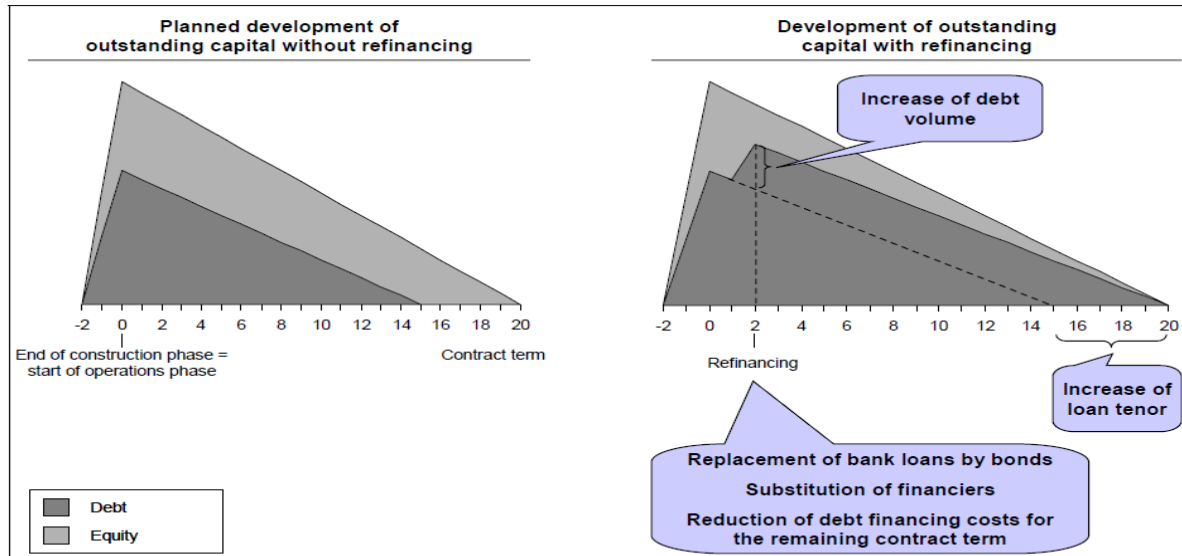
The Global Agreement (FRA V) enabled Lusoponte to refinance the bank debt. This process results in better financing conditions for the project, which typically aims at improving the terms of debt and has an impact of about 80 to 90% of the investment. These processes are expected and natural due to the high length and leverage level of PPP Contracts.

The gains that result from this process are normally obtained through a combination of 3 possible variables:

- Decrease of the interest rate, by way of decrease in the risk of the project;
- Increase of the maturity of the loan, reducing its net present value;

- Increase in the amount of debt, reducing equity for the shareholders and consequently reducing the Weighted Average Cost of Capital (WACC). (Exhibit 4)

**Exhibit 4 - Theoric Representation of Refinancing a Project**



**Figure 1. Schematic representation of a refinancing in a project financing**

Source b - "Refinancings in Public-Private Partnerships - Conceptual Issues and Empirical Results from the UK and Germany"; Jirka Gehrt, Jan Peter Klatt and Thorsten Beckers.

Lusoponte, after conducting this process, obtained the following financing conditions:

- Increase in Senior Debt of 120 M. €, to face additional costs in the construction phase.
- Adjusted the debt profile to the new map of projected cash-flows, through the reduction of the projects risk and the evolution of the financial markets between 1995 and 2000. That included the reduction of Country Risk and consequently the reduction of the national debt spreads, private and public, compared with the German Bonds.
- Reduction of the equity level of shareholders, which enabled Lusoponte to improve its shareholders return and the WACC.

Exhibit 5 describes the impact of the changes made in the Global Agreement in terms of Financial, Operational, Fiscal and Risk Allocation:

**Exhibit 5 - - Impact of the Alterations in the Global Agreement**

<b>Operational</b> Direct Compensations. Increase in Concession Lifetime Partial Tranfer of Maintenance Costs	<b>Financial</b> Refinancing of the concession, with new and better financial conditions.
<b>Fiscal</b> Risk Coverage of the Alteration of IRC tax (Income Tax) Alteration of the IVA (VAT) from 17% to 5%.	<b>Risk Allocation</b> Alteration in the allocation of several risks including: Demand Risk Financing Risk

The extensive description of the FRA's is in need of a synthetic overview. The next section provides a table that summarizes the previous sections in detail

### **3.4. Synthesis of FRA's**

#### **3.4.1. General Settlement Agreements and Reasons for FRA's**

Table 3 summarizes the reasons for the FRA's and the negotiated/provided GSA. The total amount transferred from the State to Lusoponte through Direct Compensations is 490,4 M. €. It stresses the fact that the way these risks were managed lacked a strong negotiating position by the government. Therefore, an imbalance in the positions enabled the private party (Lusoponte) to obtain the demanded funds without proper negotiation. Table 3 also indicates that the preferred instrument used to manage the FRA's was the GSA or Direct Compensation to Lusoponte.

**Table 3 - General Settlement Agreements and Reasons for the FRA's**

This table synthesizes the reasons for the request of FRA's I through VI, the Direct compensations granted by the government emphasizing the non-existence of proper negotiation, since there are no differences between the requested GSA and the granted GSA.

Reasons for FRA	Funds Demanded	Funds Granted	Payment
FRA I - 1995			
Non increase of toll fares in 1994 and the introduction of discounts in Ponte 25 de Abril.	90,4 M. €	90,4 M. €	GSA (Direct Compensation)
Increase in the global risk of the project because of the protests of June 1994.			
FRA II - 1996			
Delay, until the 31st March 1998, of the annual updating regime of tolls according to the level of CPI.	4,9 M. €	4,9 M. €	GSA (Direct Compensation)
FRA III - 1997			
Non-payment of tolls in Ponte 25 de Abril in the August months of 1996 and 1997.	3,8 M. €	3,8 M. €	GSA (Direct Compensation)
FRA IV - 1999			
Freezing of toll prices in Ponte 25 de Abril from 1st April 1998 to 31st December 1999	63,2 M. €	63,2 M. €	GSA (Direct Compensation)
Non-payment of tolls in Ponte 25 de Abril in the August months of 1998 and 1999			
FRA V - Global - 2000			
Regime change in the toll fares of Ponte 25 de Abril (from an equalitarian principle to a differentiation principle in both bridges);	306,1 M. €	306,1 M. €	GSA (Direct Compensation)
Non-payment of tolls in Ponte 25 de Abril in the August months for the whole period of the concession;			
Acknowledgement of the claims of unexpected costs of construction;			
Acknowledgement of the unexpected costs of expropriation on the area of Salinas de Samouco;			
FRA VI - 2008			
Renegotiation of the contract due to the impact of the alteration of the Income Tax (IRC).	22 M. €	22 M. €	GSA (Direct Compensation)
The EP (Estradas de Portugal) were sent to negotiate the following:			
Extinction of GATTEL;			
Alteration of the Income Tax;			
Reclassification of volumes of Class 1.			
Introduction of tolls in August in Ponte 25 de Abril;			
Viability of the Salinas de Samouco Foundation;			
Placing of protection nets in the north connection of Ponte 25 de Abril;			



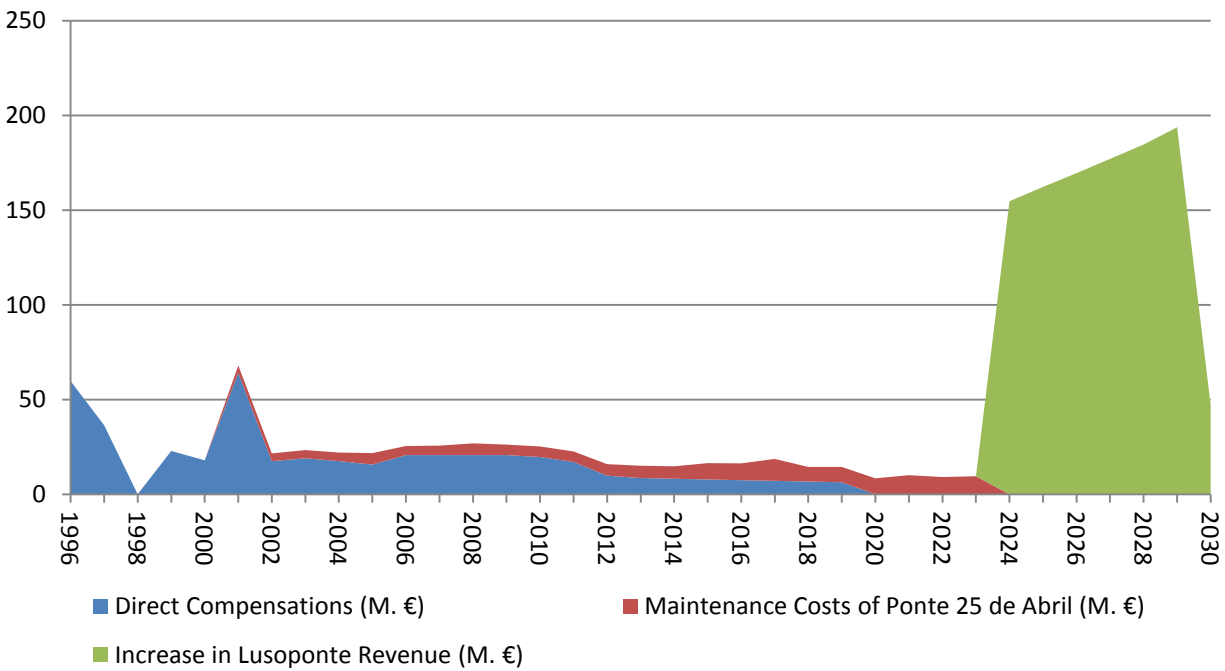
## 4. NPV and Risk Analysis

### 4.1. NPV Analysis of GSA's and Indirect Compensations

Every FRA demanded by Lusoponte since 1994 resulted in either 2 forms of compensation: Direct (GSA) or Indirect (Extension on the concession deadline, transference of risks, etc.). The amounts that were transferred directly, the maintenance costs that were supported by the government and the increase in revenue due to the extension of the concession deadline (from the projected 2024 to 2030), are described in Table 4. This table provides a timeline between 1994 and 2030, so it uses the projected values from the Report of Tribunal de Contas 31/2000 and 47/2001 to the years following 2012.

Graph 1 represents the data from Table 4 and shows that the evolution of the transfers was not equal. While the direct compensations and increased maintenance costs represent all the transfers until 2024, it is the projected revenue for Lusoponte for the additional 6 years after the concession's previous deadline that represents 65% of Total Projected Transfers.

**Graph 1 - Government's Transfers to Lusoponte 1996-2030**



**Table 4 - Total State Transfers to Lusoporte (Direct and Indirect Compensations)**

This table presents the transfers made from the government to Lusoporte from 1996 to 2030 (values from 2012 to 2030 are projections) by type of transfer.

Year 2001: Includes a Settlement of 40 M. € that accounts for Land expropriation and accessibility taken from Carmona, M., & Macário, R., & van der Hoofd, M. (2006). "Pricing regimes and financing of land passenger transport infrastructure and services in Portugal". Paper presented at the Association for European Transport Conference held in Strasbourg, France on 18-20 September 2006.

Year	Direct Compensations	Maintenance Costs of Ponte 25 de Abril	Increase in Lusoporte Revenue	Total (State)
1996	59,659	0	0	59,659
1997	36,41	0	0	36,41
1998	0	0	0	0
1999	22,82	0	0	22,82
2000	17,907	0	0	17,907
2001	64,021	3,891	0	67,912
2002	17,458	4,09	0	21,548
2003	18,954	4,34	0	23,294
2004	17,458	4,539	0	21,997
2005	15,662	6,035	0	21,697
2006	20,65	4,788	0	25,438
2007	20,65	4,988	0	25,638
2008	13,05	6,185	0	19,235
2009	18,054	5,537	0	23,591
2010	17,751	5,547	0	23,298
2011	15,338	5,567	0	20,905
2012	8,029	6,085	0	14,114
2013	7,643	6,484	0	14,127
2014	7,273	6,584	0	13,857
2015	6,9	8,629	0	15,529
2016	6,497	8,879	0	15,376
2017	6,121	11,572	0	17,693
2018	5,789	7,681	0	13,47
2019	5,264	8,081	0	13,345
2020	0	8,38	0	8,38
2021	0	10,026	0	10,026
2022	0	9,078	0	9,078
2023	0	9,477	0	9,477
2024	0	0	154,672	154,672
2025	0	0	162,209	162,209
2026	0	0	169,492	169,492
2027	0	0	177,023	177,023
2028	0	0	184,585	184,585
2029	0	0	193,683	193,683
2030	0	0	47,037	47,037
<b>TOTAL</b>	<b>429,358</b>	<b>156,463</b>	<b>1088,701</b>	<b>1674,522</b>

All values are in Millions of EUR and are Nominal Values.

Source c – Base Case of the Global Agreement and the Audit to the Global Agreement celebrated between the State and Lusoporte; Tribunal de Contas 2nd Section Report 47/2001;

Until 2012, the government has transferred to Lusoponte, given the FRA's and their consequent compensations, a total of 445,5 M. € (383,8 M. € from direct compensations and 61,7 M. € in increased maintenance costs) which will amount to 585,8 M. € by the end of the concession. Plus the additional revenues projected from the extension of the concession's deadline of 1088 M. €.

To evaluate the dimension of the transfers made to Lusoponte throughout the concessions lifetime, it is necessary to compare these values to the initial funding for the construction of Ponte Vasco da Gama.

Table 5 uses the cash-flows of Table 4 to calculate the Net Present Values (NPV) of the total transfers of capital. The table discriminates between the three types of transfers and the total transfers. The NPV's are discounted using a 6%<sup>9</sup> and 4,5%<sup>10</sup> annual interest rate.

**Table 5 - NPV (6%/4,5%) (1995) of government Transfers by type and Percentage of initial funding**

This table describes the Net Present Value in 1995 of the government Transfers to Lusoponte under 2 different discount rates. A percentage of the initial funding for the construction of Ponte Vasco da Gama is also presented for better understanding of the dimension of the values on the projects financial balance.

Transfer Type	Scenario 1 (6%)		Scenario 2 (4,5%)	
	NPV	% (Initial Funding)	NPV	% (Initial Funding)
Direct Compensations	273,19	30%	301,97	34%
Maintenance Costs	56,22	6%	71,25	8%
Increased Revenue	171,87	19%	269,68	30%
Total	501,28	56%	642,90	72%

All values are in Millions of €

Source 4 - NPV values discounted from Cash-flows of Table 4.

Initial funding = 897 M. €, taken from Table 1.

Using a 6% interest rate to calculate the Total Projected Transfers NPV in 1995, the government has transferred 501,28 M. € to Lusoponte for the concession project in total. This value is more than half (56%) of the cost of construction of Ponte Vasco da Gama. With a 4,5% interest rate the NPV climbs to 642,9 M. € in transfers, corresponding to 72% of the construction of Ponte Vasco da Gama's initial funding. All the aforementioned values are nominal.

<sup>9</sup> Legal Discount Rate -

<sup>10</sup> Yield to Maturity of government Bonds before 2009 – Source:  
<http://www.tradingeconomics.com/portugal/government-bond-yield>

These NPV's are a measure of the amounts that would have been transferred to Lusoponte at the time of the initial concession contract. Therefore, Table 6 illustrates the initial funding structure with the government Transfers under Scenario 1 (6% interest rate) and Scenario 2 (4,5% interest rate). Under both scenarios, should the government have participated in the initial funding of Ponte Vasco da Gama, it would have been the biggest contributor to the construction project with a contribution of 36% (Scenario 1) and 42% (Scenario 2) of total funding.

**Table 6 - Initial Funding w/ NPV (6%/4,5%) of government Transfers**

This table presents the initial funding for the construction of Ponte Vasco da Gama with the 1995 NPV of government Transfers as a regular investor in the project at the beginning of the project. The NPV's are discounted at a 6% and 4,5% rate in 2 different scenarios.

<b>Financing Source</b>	<b>Scenario 1 (6%)</b>		<b>Scenario 2 (4,5%)</b>	
	<b>Funds (M. €)</b>	<b>%</b>	<b>Funds (M. €)</b>	<b>%</b>
Cohesion Fund	319.000.000 €	23%	319.000.000 €	21%
EIB Loan	299.000.000 €	21%	299.000.000 €	19%
Revenues from Exploration of Ponte 25 de Abril	50.000.000 €	4%	50.000.000 €	3%
Others (Shareholders, Gov. Support, etc.)	229.000.000 €	16%	229.000.000 €	15%
Government Tranfers	501.278.933 €	36%	642.899.367 €	42%
<b>Total</b>	<b>1.398.278.933 €</b>	<b>100%</b>	<b>1.539.899.367 €</b>	<b>100%</b>

Source 5 – Values from the table were taken from Table 1 and Table 5. Percentages were calculated with the initial funding taken from Table 1.

## **4.2. Risk Analysis**

The Second Concession Contract (Initial Contract) featured a specific allocation of risks and a framework of risk management for certain occurrences. However, throughout the concession's lifetime, the numerous FRA's generated direct and indirect compensations and changes to the contract which had an impact on the allocation and magnitude of the risks of the project.

### **4.2.1. Allocation**

Table 7 below shows the evolution of risk allocation from the initial contract to the last FRA (FRA VI) of 2008. The risks considered are Political, Operational and Financial and the chosen sub-types are the most relevant risks to consider regarding the impact the decisions made in the FRA's had on their allocation. In yellow are the risks that had a change in the allocation during the concession period so far, being the Risk of Generic Regulatory Changes the only one that was completely transferred.

**Table 7 - Evolution of Risk Allocation**

This table describes the risk allocation in the initial contract and the current risk allocation of several risks. In yellow are the sub-types of risk that suffered a change in allocation.

Type of Risk	Sub-sections of Risk	Risk Allocation	
		Initial Contract	Currently
Political	Unilateral Changes	Government	Government
	Force Majeur Events	Government	Government
	Opposition of Lusoponte to the Tarriff Change	Government	Government
	New Crossing of the Tagus	Government	Government
	Rescission of the Contract	Government	Government
	Specific Regulatory Changes	Government	Government
	Generic Regulatory Changes	Lusoponte	Government
	Resolution of the Contract (Force Majeur)	Government	Government
Operational	Quality Risk	Lusoponte	Lusoponte
	Infra-structure Maintenance	Shared	Government
	Insurance	Lusoponte	Lusoponte
Financial	Demand Risk	Lusoponte	Shared
	Exploration Risk	Lusoponte	Lusoponte
	Expropriation Delay	Government	Government
	EU Subsidy Delay	Government	Government
	Financing Risk	Lusoponte	Shared
	Severe Shocks in Exchange Market	Government	Government
	Residual Value of Assets	Government	Government
	Caution	Government	Government

Source 6 – Taken from the Initial Contract description and FRA’s descriptions present in Sections 3.1 through 3.3.

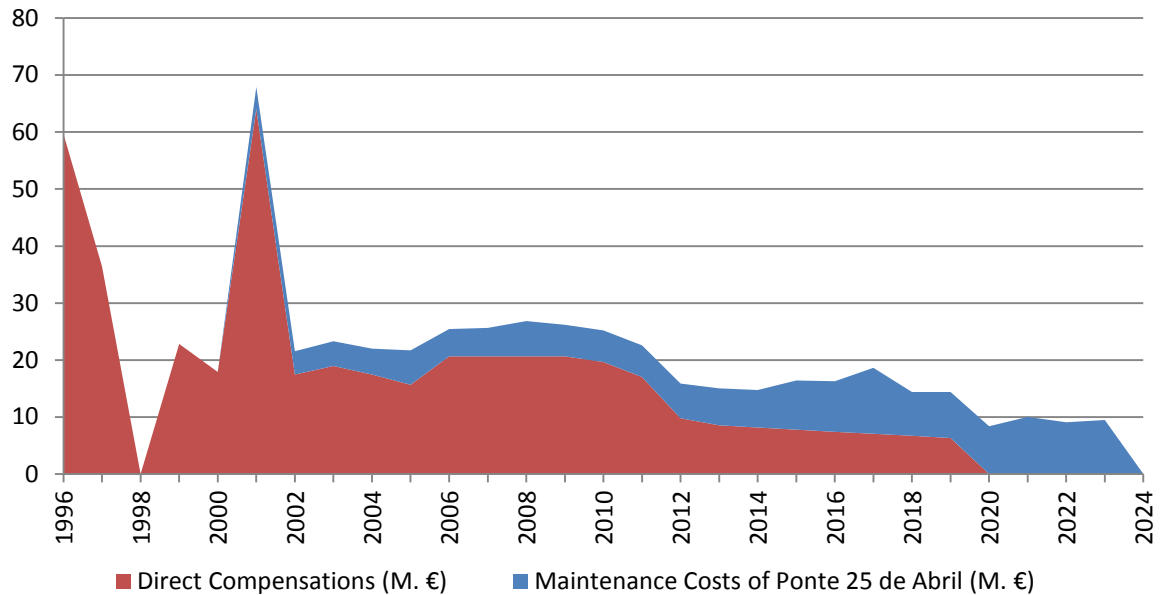
#### **4.2.1.1. Generic Regulatory Changes, Infrastructure Maintenance and Financing Risk**

The Global Agreement of 2000 was the FRA that had the most impact on the risk allocation framework. The allocation of political risk of Generic Regulatory Changes was changed in order to compensate Lusoponte in the fifth FRA. The government assumed the risk coverage of a future increase in the IRC (Income Tax).

To further compensate Lusoponte, the government also assumed the maintenance costs of Ponte 25 de Abril which were, until then, shared between both parties. Graph 2 maps the quantitative effects of this change in risk allocation, with projected costs from 2011-2024.

**Graph 2 - Quantitative Impact of Change in Maintenance Risk Allocation**

This graph represents the Direct Compensations and Maintenance Costs that complete the total government Transfers from 1996 to 2024.



Source 7 – Taken from the values Table 4.

The initial contract allocated the financing risk solely to Lusoponte. The refinancing of FRA V (Section 0) introduced better financing conditions to the project. Consequently, the government began sharing the financing risk with Lusoponte. The new financing conditions and the additional 120 M. € for increasing costs for the Construction of Ponte Vasco da Gama were incorporated in the New Base Case of the Global Agreement. This meant an indirect compensation to Lusoponte since these financing conditions can influence the financial balance of the project and can be subject to a request for another FRA.

FRA V also introduced increased responsibilities of the government in case of resolution/rescission of the concession contract. The government agreed that it would not only be responsible for the debts the project generated to the national and international banks but was also responsible for the liquidation of the society that was generated by the concession and the investments made by the shareholders of Lusoponte during the lifetime of the concession.

#### **4.2.1.2. Traffic Risk**

Initially, the base model allocated the traffic risk solely to Lusoponte. Demand risk is seen in the literature as a negotiable risk that can be allocated to each party or shared (Irwin, Timothy C., 2007),

(OECD, 2008), (Grimsey and Lewis; 2004). In many Private-Public Partnerships, the demand risk (traffic risk) is divided between both parties due to, on the one hand, the feeble financial sustainability of the project's assets or the concession, and on the other hand the high uncertainty this risk represents to the project.

In the Lusoponte Concession, the total transference of this risk to the private party was possible due to the exclusivity clause (Section 3.1.4). This prevented the government from paying for a risk that is inexistent until now, since the government's project of building a Third Crossing of the Tagus is still in the project phase and is, at this moment, suspended.

Nonetheless, traffic risk has been shared between concessionaire and grantor due to the above described FRA's and more specifically, the decisions made regarding the financial rebalances. These decisions (compensations and changes to the contract) led to the concessions revenues being dependent of settlements and financial compensations from the government, rather than being dependent of traffic volume and its respective collection.

The calculation of the GSA was made solely based on the Base Case. It, however, did not set the adequate Price Elasticity of Demand (PED) for the calculation of the Balanced and Unbalanced Scenarios. The Base Case was designed to expect an increase in toll prices, since the unilateral changes demanded a decrease; the Base Case set the PED to 1.<sup>11</sup>

## 5. Conclusions

Portugal witnessed a considerable increase of PPPs contracts since the end of the 90's, especially road concessions, in which the B.O.T. model was predominantly chosen. Such were the conditions for the construction of Ponte Vasco da Gama, resulting in the creation of Lusoponte. Although common and fairly regular, financial rebalances in a concession are symptoms of incomplete contracting. In the Lusoponte Concession the systematic FRA's created an imbalance towards the private party.

The NPV analysis (Section 4.1) showed that the resulting direct and indirect compensations given to Lusoponte by the government, created an imbalance in the initial purpose of the concession contract. The total amount of transfers discounted with a 6% interest rate, yields transference of

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<sup>11</sup> Reasoning presented in the Appendix (Section 6.1)

funds to Lusoponte that reaches more than half of the initial funding for the construction of Ponte Vasco da Gama (Table 5).

The initial funding of the project had no participation of the government, it was structured solely with Cohesion funds (EU) and private funds. However, after 15 years and several FRA's, the government has become the biggest contributor to the funding of the construction of Ponte Vasco da Gama contributing between 36% (Scenario 1) and 42% (Scenario 2) of initial the funding (Table 6).

In fact, summing the Cohesion fund with the NPV of government transfers, under the 2 scenarios of 4,5% and 6% discount rates, we have 59% (Scenario 1) and 63% (Scenario 2) of total non-private funding. This leads to the conclusion that the funding for the construction of Ponte Vasco da Gama was predominately public.

This imbalance, if it were predicted, would change completely the initial contract and generate a different Public-Private Partnership agreement, with fewer government guarantees and FRA methodology, as the government was now participating in the funding.

The framework for the FRA's (Section 3.1.6) introduced a specific risk management scheme that predicted a set of occurrences that would affect the financial balance of the project and a framework to manage them. It used a Base Case (Section 3.1.7) to predict the compensations that would restore the financial balance to the project. This framework was used and altered throughout the several FRA's as was the Base Case. The alterations to the contract and to the framework of FRA's had an impact on the risk allocation of the concession, mainly transferences occurred towards the government. From a map that predicted a mostly balanced risk allocation (compared with the current framework for road concessions in Portugal (DGTF, 2011)), four risks were reallocated due to the requested FRA's. The risks of Generic Regulatory Changes, Demand, Financing and Maintenance of Ponte 25 de Abril had different allocations from the initial contract.

From all the re-allocations of risks cited above, the Demand Risk was the most active since it suffered direct effect from the FRA's. The initial contract stated Traffic Risk to be solely attributed to the private party. However, the successive FRA's demanded the government to share this risk with Lusoponte. The successive direct compensations transferred to Lusoponte made the revenues from the Exploration of Ponte 25 de Abril to be dependent on those settlements instead of on the traffic flow and the respective toll collection. Moreover, the anomalies detected in the calculation of those settlements, based on an unrealistic Base Case, inflated its amount and created a difference of 2,9 M. €, that benefitted Lusoponte (Section 6.1).



The final analysis of the concession is greatly tipped toward the private party. The current risk allocation leaves Lusoponte to manage the risk of Exploration, Quality and Insurance on its own and share the risk of Demand and Financing with the government. It is also predicted to receive from the government an additional 1243,17 M. € until the end of the concession in direct and indirect compensations from all the FRA's.

### **5.1. Limitations/Suggestions**

The extinction of GATTEL from FRA VI (Section 3.2.4) diminished the availability of the data used in this paper to make a more thorough analysis of the direct compensations. The lack of detailed data on the traffic projections and effective traffic flow prevented an additional section from entering this paper. This section would provide an updated view from the one presented in the Tribunal de Contas Report (31/2000) on the difference between the revenues from Lusoponte predicted in the Base Case and the Effective Revenues.

This paper presents a Case Study that can be used to explore the Lusoponte concession more thoroughly. It is a source of misleading in management of PPP contracts and, more specifically, in the management of risk and renegotiation. The reasons for some of the decisions made by the government in negotiating the compensations, the ineffectiveness of the Base Case, the risk management framework, the applicability of the IRR (Internal Rate of Return) of 11,43% with this new risk allocation, these are just some of the suggestions for further work that can answer some questions and lead to others regarding the Lusoponte Concession. The increasing controversy surrounding this case, make it an important source for research in the PPP literature and lessons for future PPP's in Portugal.

### **5.2. Prospect of Future FRA's**

The economic crisis of 2008 exposed the fragilities of the Portuguese government in controlling its sovereign debt. A recent help package (2011) from the European Commission, European Central Bank and International Monetary Fund for Portugal introduced several structural changes that include the renegotiation of the contracts of several PPP's, Lusoponte concession is one of them<sup>12</sup>.

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<sup>12</sup> "PORTUGAL - MEMORANDUM OF UNDERSTANDING ON SPECIFIC ECONOMIC POLICY CONDITIONALITY", 17 May 2011. Link: [http://aventadores.files.wordpress.com/2011/05/2011-05-18-mou-portugal\\_en.pdf](http://aventadores.files.wordpress.com/2011/05/2011-05-18-mou-portugal_en.pdf)

The contract renegotiation will surely lead to an FRA. PPP's in Portugal have become a huge source of cost for the government, the Lusoponte concession included, and the government can reach a scenario in which it will be unable to fulfill its contractual obligations with the private parties. Therefore the governments necessity to reduce costs can also be a reason for the renegotiation of certain direct and indirect compensations that were attributed to Lusoponte.

## **6. Appendix**

### **6.1. Example of GSA (General Settlement Agreement) calculation using the Base Case**

The Report of Tribunal de Contas 31-2000 provides the exercise made by both parties in calculating the settlement to be transferred from the government to Lusoponte as it is disposed in the initial concession contract for FRA's II through IV. For the purpose of this paper I will only transcribe and explain the exercise made for FRA II.

FRA II was requested by Lusoponte to correct the financial imbalance the project would suffer from the frozen toll prices in Ponte 25 de Abril from 1996 to the end of 1997. The previous project financial balance (FRA I Base Case) is the balanced version of the FRA II. In other words, the financial balance without the unilateral changes made in FRA II. Report 31-2000 shows the calculation of the GSA by showing the revenues in balanced, unbalanced and rebalanced scenarios with the traffic flow, toll fares, elasticities<sup>13</sup> and Frequent Users Discount<sup>14</sup>. Table 8 describes solely the Revenues by Class<sup>15</sup> and the cumulative revenues for the period from January 1st 1996 to July 31st 1998, as well as the first semester Revenues from the Collection of toll fares of Ponte Vasco da Gama. All the values in the Report were in PTE and were converted to EUR<sup>16</sup>. The inclusion of the frozen prices from 1996 to 1997 alters the financial balance of the projected revenues for Lusoponte, as is shown in the Unbalanced Scenario presented in the table. The difference of the cumulative revenues in the first semester of 1998 of both versions is the settlement that was transferred from the government to Lusoponte. This difference is 980 million PTE (4,9 M. €) which upon transfer to Lusoponte, financially rebalances the project as is shown in Table 3. The

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<sup>13</sup> Price Elasticity of Demand (PED) by class

<sup>14</sup> Frequent User Discount, the discount unilaterally demanded by the government in FRA I. Described in Section 3.2.1

<sup>15</sup> Criteria for the distinction between classes of vehicles is present in the Portuguese Legislation in the Decree-Law 294/97, of 24<sup>th</sup> October.

<sup>16</sup> Exchange rate: 1 EUR – 200,482 PTE

Rebalanced Scenario is not present in the example since it adds no new information to this exercise, although it's present in the Tribunal de Contas Report.

The calculation of the direct compensation to be transferred to Lusoponte has two discernible anomalies, spotted and corrected by Tribunal de Contas in both its 2000 and 2001 report<sup>17</sup>. The price alterations unilaterally demanded by the government did not have an impact on the traffic projections of the Base Case. The several PED's present in the Report do not correspond to reality since each one of the elasticities considered for each class is below or equal 100%. A decrease in price (experienced between both Balanced and Unbalanced Scenarios) were expected to induce an increase in traffic projections. Report 41/2000 from Tribunal de Contas presented the difference between the effective traffic flow and the projected traffic flow to be positive. This difference is chronic and present in every FRA between 1996 and 1998. This created a difference between the effective losses of Lusoponte (from the unilateral changes made by the government) and the Direct Compensations transferred of 2,9 M. €.

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<sup>17</sup> Tribunal de Contas Report 31/2000 and 47/2001

**Table 8 – Balanced and Unbalanced Scenarios of FRA II**

This table presents the Semester Revenues and cumulative revenues of Lusoponte by class of vehicles from the period of 1996 to 1998, in both the Balanced and Unbalanced Scenarios according to the changes made in FRA II.

<b>Balanced Version</b>					
<b>Base Case</b>					
<i>Semester Projections</i>					
<i>Revenues (Semester)</i>	1996-I	1996-II	1997-I	1997-II	1998-I
Class 1	5.786.056 €	6.733.772 €	5.935.695 €	6.733.772 €	7.681.488 €
Class 2	3.092.547 €	3.142.427 €	3.591.345 €	3.691.104 €	5.387.017 €
Class 3	299.279 €	299.279 €	349.159 €	349.159 €	498.798 €
Class 4	498.798 €	498.798 €	598.557 €	598.557 €	897.836 €
Revenues from Ponte Vasco da Gama					1.995.192 €
Total Semester	9.676.679 €	10.674.275 €	10.474.756 €	11.372.592 €	16.460.331 €
Cumulative Revenues	9.676.679 €	20.350.954 €	30.825.710 €	42.198.302 €	<b>58.658.633 €</b>
<b>Unbalanced Version</b>					
<b>Base Case</b>					
<i>Semester Projections</i>					
<i>Revenues (Semester)</i>	1996-I	1996-II	1997-I	1997-II	1998-I
Class 1	5.287.258 €	5.985.575 €	5.337.137 €	5.985.575 €	7.382.209 €
Class 2	2.843.148 €	2.843.148 €	3.192.307 €	3.192.307 €	5.137.618 €
Class 3	249.399 €	249.399 €	299.279 €	299.279 €	498.798 €
Class 4	498.798 €	498.798 €	548.678 €	548.678 €	847.956 €
Revenues from Ponte Vasco da Gama					1.995.192 €
Total Semester	8.878.603 €	9.576.920 €	9.377.400 €	10.025.838 €	15.861.773 €
Cumulative Revenues	8.878.603 €	18.455.522 €	27.832.923 €	37.858.760 €	<b>53.720.534 €</b>

Source 8 - Tribunal de Contas Report 31/2000

## 7. Bibliography

Abednego, Martinus P., and Ogunlana, Stephen O., “Good project governance for proper risk allocation in public–private partnerships in Indonesia”, *International Journal of Project Management* 24 622–634 (2006).

Allen, Grahame, “The Private Finance Initiative”, Research Paper 01/117, Economic Policy and Statistics Section of the House of Commons Library, England (2001).

Carmona, M., and Macário, R., and van der Hoofd, M., “Pricing regimes and financing of land passenger transport infrastructure and services in Portugal”, Association for European Transport Conference, France, (2006).

Carmona, Miguel, and Macário, Rosário et. al., “Pricing regimes and financing of land passenger transport infrastructure and services in Portugal”, Association for European Transport and contributors (2006).

Cruz, Carlos Oliveira, Marques, Rui Cunha, “Revisiting the Portuguese experience with public-private partnerships”, *African Journal of Business Management* Vol.5 (11), pp. 4023-4032, (2011).

De Lemos, Teresa, and Eaton, David, and Betts Martin, and Tadeu, Luis de Almeida, “Risk management in the Lusoponte concession—a case study of the two bridges in Lisbon, Portugal”, *International Journal of Project Management* 22 pp. 63–73 (2004).

Direcção-Geral do Tesouro e Finanças, “Parcerias Público-Privadas e Concessões – Relatório de 2011”, Portugal (2011).

Edwards, L., “Practical risk management in the construction industry. Engineering management series”, London: Thomas Telford (1995).

Flanagan, R., and Norman, G., “Risk management and construction”, Oxford-Blackwell Scientific Publications; (1993).

Gehrt, Jirka, and Klatt, Jan Peter, and Beckers, Thorsten, “Refinancings in Public-Private Partnerships - Conceptual Issues and Empirical Results from the UK and Germany”, Workgroup for Infrastructure Policy (WIP) at Berlin Institute of Technology (TU Berlin), (2010).

Grimsey, Darrin, and Lewis, Mervyn K., “Public Private Partnerships - The Worldwide Revolution in Infrastructure Provision and Project Finance”, UK and USA, Edward Elgar (2004).

Guasch, J. Luis, Jean-Jacques Laffont, and Stephane Straub, “Renegotiation of Concession Contracts in Latin America”, Policy Research Working Paper no. 3011, World Bank, Washington, D.C. (2003).

Guasch, J. Luis, Laffont, Jean-Jacques, and Straub, Stéphane, “Renegotiation of Concession Contracts: A Theoretical Approach”, Review of Industrial Organization, World Bank, Washington, D.C. (2006).

[http://www.lusoponte.pt/pvg\\_projecto\\_financiamento.htm](http://www.lusoponte.pt/pvg_projecto_financiamento.htm)

<http://www.tradingeconomics.com/portugal/government-bond-yield>

Infrastructure Projects”, The International Bank for Reconstruction and Development/The World Bank, Washington DC, (2007).

Irwin, Timothy C., “government Guarantees - Allocating and Valuing Risk in Privately Financed OECD, “Public-Private Partnerships – In pursuit of risk sharing and value for money”, (2008).

Quiggin, John, “Public–Private Partnerships: Options for Improved Risk Allocation”, The Australian Economic Review, vol. 38, no. 4, pp. 445–50 (2005).

Sarmiento, Joaquim Miranda, “Do Public Private Partnerships Create Value for Money for the Public Sector? The Portuguese Experience”, Lisbon (2010).

Sindane, J., “Public–private partnerships: case study of solid waste management in Khayelitsha–Cape Town, South Africa. In: Montanheiro L, Linehan M, editors. Public and private sector partnerships: the enabling mix”, Sheffield Hallam University; pp.539–64 (2000).

Tribunal de Contas – Sector Publico Empresarial, “Auditoria á aplicação do Model Contratual e aos Acordos de Reposição do Equilibrio Financeiro – Concessão Estado/Lusoponte, SA”, Relatório 31/2000 – 2ª Secção, (2000).

Tribunal de Contas, “Auditoria ao Acordo Global celebrado entre Estado e Lusoponte”, Relatório 47/2001 – 2ª Secção, (2001).

Ward, S.C., and Chapman ,C.B. , “On the allocation of risk in construction projects”. International Journal of Project Management 9(3) pp. 140–7 (1991).